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margins of the wings and with a costa of the type found in *M. grandiflora*. These species are *M. comata* Steph. (of New Caledonia), *M. glaberrima* Steph. (of Chile, Patagonia, New Zealand and Australia), and *M. sinuata* Loitles. (of Peru). The first and third of these are known to the writer from description only. In *M. comata* the plants are epiphyllous, the thallus is plane, and the cells of the wings are unusually large, measuring  $126 \times 54 \mu$  according to the description. In *M. glaberrima* the thallus is plane and is often naked throughout, even marginal hairs being absent; the female branch, moreover, bears surface hairs, as is usual in the genus. In *M. sinuata*, which is known only from the original material, the thallus is strongly convex as in *M. grandiflora*, but the wings are often thirty-five cells wide, the hairs are  $150 \mu$  long, and the margin is described as being deeply sinuate or, rather, interruptedly recurved, a condition which is apparently never duplicated by *M. grandiflora*. Unfortunately *M. sinuata* was described from sterile material, and there may be difficulty in recognizing it again.

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#### SHORTER NOTES.

A NEW PHACELIA FROM COLORADO.—*Phacelia denticulata* sp. nov. Annual, the stem one to three dm. or more high, sometimes branching from near the base, pubescent and somewhat viscid-glandular; the leaves broadly linear in outline, five to six cm. long including the petiole, one and one half to two cm. wide, the small plants having smaller leaves, the lower part divided, the upper part pinnatifid, hispid pubescent on both surfaces; the inflorescence scorpid and of several branches on the larger plants, the longer ones becoming four to six cm. long in fruit; the calyx lobes linear, obtuse, hispid and minutely glandular; the corolla blue or bluish, about five mm. long, the lobes denticulate, the stamens and style included; the seed capsule becoming five or six mm. long, equaled by the calyx lobes, four seeded, the seeds oblong, four mm. long, and lightly faveolate.

*Phacelia denticulata* belongs with *P. glandulosa* Nutt. and *P. Neo-Mexicana* Thurber; the leaves are like those of the former, but the flowers are nearer those of the latter. Dr. Gray, in the

Synoptical Flora of North America, under *P. NeoMexicana*, wrote: "A peculiar state of a short-stemmed form, with much less dissected leaves and almost oblong capsule, coll. in central part of Colorado by *Brandege*, needs further inquiry." I suppose this is the plant to which he referred. It begins to blossom about the first of June. The type specimens were collected in the vicinity of what is known as the Glades, between Fort Collins and Livermore, Larimer County, Colorado, June 18, 1915. Osterhout no. 5233.

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SNOW INJURY TO TREES.—A recent visit to Tarrytown, N. Y., and a trolley trip from Tarrytown toward White Plains, N. Y., showed the trees suffering severely as a result of breakage from snow. The damage was in the form of broken branches, split trunks, etc., not at all an unusual type of injury, but, to the writer at least, unusual in that it was due to snow and not to ice, and also unusual in its severity.

The snowstorm had occurred about the middle of December, and was of the ordinary wet snow type as far as my informant had noted, but judging from the results, it evidently must have been more than ordinarily heavy. In Tarrytown, the street had been covered with branches, wires were broken down, and where trees were close together along a street, sidewalks had been made impassable. Without any attempt at making a record of species, it may be noted that dogwood, maple, and horse chestnut were seen from which branches had been broken. Probably no kinds were exempt. Nearly every tree testified to the injury by the presence of the pruned stumps of large and small limbs. It may be noted that much of the pruning had left too much stump.

In open woods outside of Tarrytown, it also appeared that almost every tree had suffered. The gray birches were still bent double. Splintered scars showed everywhere. Forking trunks were split apart. Very often, of course, the scars showed evidence of bad wood, but in many cases there was no such evidence. Sound limbs as much as four or five inches thick had been broken off, together with a mass of lesser limbs. For anyone interested in

getting illustrations of natural pruning, there is just now an unusual opportunity in the woods near Elmsford, just east of Tarrytown.

R. C. BENEDICT

## REVIEW

### **Chamberlain's Methods in Plant Histology\***

During the fifteen years which have elapsed since its initial appearance, Chamberlain's "Methods in Plant Histology" has come to be generally regarded as an almost indispensable part of every teaching botanist's equipment. The first edition (1901), followed four years later (1905) by a second, has now been superseded by a third. This volume follows the same general scheme as the second edition. In Part I (pp. 1-147) the principles and methods of technique have been described in a general way. As before, there are chapters on apparatus, reagents, stains and staining, temporary mounts and microchemical tests, freehand sections, the glycerin method, the Venetian turpentine method, the paraffin method, the celloidin method, and special methods, while a new chapter has been added on photomicrography and lantern slides. Part II (pp. 151-307) is devoted mainly to the application to specific cases of the methods evolved in Part I. In addition, attention is given to the collection of material, its cultivation to secure reproductive phases, etc.

Although the general plan of this volume is identical with that of the preceding editions, it is virtually a new book. The subject matter has been thoroughly revised and brought up to date and has been largely rewritten. The number of pages in the present volume is fifty pages greater than that in the second edition.

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\* C. J. Chamberlain. *Methods in Plant Histology*. Third Edition. Pp. xi+314. 107 f. in text. University of Chicago Press. 1915. \$2.25 plus postage.